



Resource Technologies, Inc.

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February 22, 2021

Mr. Allen Schiff
MDEQ-PTCS
P.O. Box 200901
Helena, MT 59620

Subject: Corrective Action Work Plan and Budget;
Bruce's Quick Lube and Car Care Center; 1111 East Front Street;
Butte, Montana; Facility ID #47-06099; Release #4250; WP #34221;
TID #28421

Responsible Party: Bruce Metcalf
3626 Saddle Rock Road
Butte, MT 59701
(406) 494-5165

Dear Mr. Schiff:

On behalf of Mr. Bruce Metcalf, Resource Technologies, Inc. (RTI) is submitting the following work plan for soil vapor extraction (SVE)/ groundwater-sparge system installation, activation, and monitoring; and groundwater sampling at the former Bruce's Quick Lube (currently Jiffy Lube) located at 1111 East Front Street in Butte, Montana (Figure 1). This work plan was prepared in accordance with the request letter from the Montana Department of Environmental Quality-Petroleum Technical Section to Mr. Bruce Metcalf, dated December 7, 2020.

This work plan was prepared by: Resource Technologies, Inc.
1050 East Main Street #4
Bozeman, MT 59715

1.0 SCOPE OF WORK

Tasks described in this work plan include installation of a soil vapor extraction (SVE)/groundwater-sparge system; system operation and maintenance for four (4) quarters; baseline groundwater sampling prior to remedial system activation; and semi-annual groundwater sampling for a period of one year following system activation. Work tasks to be completed include:

- Install two additional SVE wells and three groundwater-spargers;
- Collect a soil sample from each borehole and submit samples for laboratory analysis if deemed necessary;
- Trench and install lateral SVE and sparger piping and connect to remediation wells;
- Restore disrupted pavement;
- Procure and coordinate installation of mechanical remedial system components;
- Coordinate installation of electrical service
- Collect baseline groundwater samples from site monitoring wells immediately prior to system activation;
- Monitor SVE system performance at startup and on a quarterly basis for one year after startup;
- Implement noise and odor reduction measures if necessary;
- Collect groundwater samples on a semi-annual basis for one year following system activation;
- Validate soil, groundwater, and SVE discharge analytical data using DEQ Data Validation Summary form;
- Provide interim data reports to DEQ following first two groundwater-sampling events; and;
- Present findings in a Standardized Abbreviated Generic Applications Report format (AR-07).

Proposed work tasks are discussed in the following sections.

2.0 SVE/SPARGE SYSTEM INSTALLATION

2.1 Project Management

RTI will manage and coordinate all aspects of the project including planning, collection of samples, analysis of data, and reporting. RTI will update the Site Health & Safety Plan for the planned field activities. Work zones will be established around the soil boring rig and support vehicles during remediation well installation and trenching activities.

2.2 Remediation Well Installation

In addition to the SVE well installed to conduct pilot testing, RTI will install two additional SVE wells and three groundwater sparger wells at the locations shown in Figure 2.

2.2.1 SVE Well Installation

Two SVE wells will be installed at the locations shown in Figure 2 using hollow-stem auger drilling methods. The bottom depth of the SVE wells will be 35 feet. Beginning at 5 feet below ground surface (bgs), soil samples will be collected at 10-foot intervals using split-spoon samplers. Soil characteristics (including color, texture, moisture content, etc.)

in each borehole will be documented by the RTI scientist supervising drilling activities logging on a soil borehole log using Unified Soil Classification System (USCS) terminology. Soil samples will be field screened for the presence of organic vapors using a photoionization detector (PID) and standard headspace methods.

One soil sample per borehole may be retained and submitted for laboratory analysis if deemed necessary; however, retention of soil samples for analysis is not anticipated since SVE wells will be placed in areas that have been extensively sampled during site characterization. One possible exception is the SVE well to be installed in the vicinity of well MW-3 at the southwest corner of the property (Figure 2).

SVE wells will be constructed using four-inch schedule 40 PVC casing and 0.040-inch well screen. Screen length will be 25 feet. The remainder of the borehole will be completed with schedule 40 PVC solid riser pipe to grade. A filter pack composed of 10/20 silica sand will be placed in the borehole annulus to a depth of no less than two feet above the screen. A bentonite seal will be placed above the sand filter pack. The well will be fitted with a locking expandable well cap, and the wellhead will be completed in a traffic-rated flush-mount manhole. The wellheads will be secured in concrete following connection of the wells to lateral piping.

2.2.2 Sparge-Well Installation

Three groundwater sparge wells will be installed at the locations shown in Figure 2 using hollow-stem auger drilling methods. Sparge-well depths are anticipated to be 38 to 40 feet bgs. During drilling, soil samples will be collected at depths of 35 to 37 feet bgs and 38 to 40 feet bgs to ensure that the sparge points are not placed within clay that underlies sandy sediments that are the target of sparging. We do not anticipate retaining soil samples from sparge wells for laboratory analysis since two of the wells will be installed in close proximity to SVE wells and the third is in a location that has been extensively sampled.

Sparge wells will be constructed with 12-inch long, 1-inch diameter ceramic sparge points and 1-inch schedule 40 PVC riser. The sparge points will be placed at depths of 38 to 40 feet bgs and a filter pack composed of 10/20 silica sand will be placed in the borehole annulus to a depth of no less than two feet above the sparge point. A bentonite seal will be placed above the sand filter pack. The well will be fitted with a locking expandable well cap, and the wellhead will be completed in a traffic-rated flush-mount manhole. The wellhead will be secured in concrete following connection of the wells to lateral piping.

2.3 Lateral Line Installation

Lateral-line trenches will be approximately three feet wide and two feet deep and will be situated as shown in Figure 2. Excavation contractors in Butte have indicated that frost may reach depths of seven feet so installing the lines below frost depth is not practical. Trench footprints will be saw cut prior to excavation.

SVE laterals will be constructed with two-inch diameter, 100 pounds per square inch (psi) polyethylene irrigation line. Sparge laterals will be constructed with one-inch diameter, 100 pounds psi polyethylene irrigation line. SVE laterals will be wrapped in heat tape to prevent freezing. Lateral lines will be bedded in four to six inches of sand and the remainder of the trenches will be backfilled with excavated material and compacted. Asphalt and concrete removed during trenching will be restored.

2.4 Mechanical Components

RTI has specified a Gast R7100R-50 blower for SVE and a Gast 6066 oilless vacuum pump for sparging. Specifications sheets for these components are attached. TSD Technical Specialties of Billings will assemble the components, moisture drop-out tank, fresh-air bleed valve, filters, and associated electrical switches in a box that will be situated at the rear of the site building on a concrete pad as shown in Figure 2. SVE and sparge lines will be manifolded and each individual line will include a shut-off valve to allow extraction/injection via any combination of wells/sparge points. Since the area behind the building abuts a residential area, the discharge stack will be routed up the side of the building, then along the rooftop to the front of the building where exhaust will be discharged to limit potential odor issues at the adjacent residential properties. RTI requested that the system be constructed with extra insulation to reduce noise. A sampling port will be installed on the discharge stack for measuring VOC concentrations in exhaust, flow rate, and collecting discharge samples.

A new electrical service to power the system will be installed including an electrical outlet to power heat tape. A service account will be established with Northwestern Energy.

3.0 SYSTEM ACTIVATION AND MONITORING

3.1 System Monitoring

SVE/Sparge system performance will be monitored at startup and at quarterly intervals for one year. VOCs concentration in SVE discharge will be measured with a Mini Rae Lite photoionization detector calibrated with 100 parts per million (ppm) isobutylene standard span gas. VOCs concentration for total discharge will be measured as well as VOCs concentration in each individual SVE line. Concentrations of oxygen (O₂) and carbon dioxide (CO₂) in SVE discharge will be measured with a multi-gas meter. SVE discharge will also be monitored with a Q Rae four gas meter to determine if VOCs concentrations in discharge present an explosion hazard. If a reading greater than 10% lower explosive limit (LEL) is measured, fresh air will be bled into the discharge until the reading falls below 10% LEL.

RTI will also measure VOCs concentrations in ambient air around the perimeter of the site to determine if treatment of SVE discharge will be required. If readings of 5 ppm are recorded that sustain for greater than one minute at any location, RTI will recommend

treating discharged air by passing it through activated carbon. We do not anticipate that this measure will be necessary.

Flow rate will be measured in-line with a hot wire anemometer. Flow rate in individual sparge lines will also be measured with the anemometer.

An in-line pressure gauge will be used to record total vacuum exerted by the system and vacuum for individual SVE wells will be measured at the wellhead with magnehelic gauges.

3.2 Discharge Sampling

Approximately one hour after system activation, and during each quarterly monitoring event, a discharge sample will be collected in a one-liter Tedlar bag from the discharge line of the blower. The air samples will be submitted under chain-of-custody procedures to Energy Laboratories for volatile petroleum hydrocarbons (VPH) analysis.

4.0 GROUNDWATER SAMPLING

Groundwater samples will be collected from all site monitoring wells prior to SVE system activation and on a semi-annual basis for two events thereafter. Semi-annual groundwater sampling events will coincide with the second and fourth quarterly SVE system monitoring events.

The wells will be sampled with a stainless-steel low-flow submersible pump and clean vinyl tubing. During sampling, groundwater stabilization parameters including pH, water temperature, specific conductance, dissolved oxygen, oxidation/reduction potential, and turbidity will be monitored and recorded on a groundwater sampling log. Drawdown in the well will be monitored with an electronic water level indicator. When groundwater parameters have stabilized in accordance with Section 2.5 of *Groundwater Sampling Guidance* (DEQ, 2018), groundwater samples will be collected in laboratory provided containers, and appropriately preserved as specified by each analytical method.

The sample containers will be placed in iced coolers to maintain a temperature of 4° C and submitted under chain-of-custody procedures to Energy Laboratories for VPH analysis.

Before purging, depth to water measurements will be collected from all site monitoring wells with an electronic water level sounder to facilitate determination of groundwater flow direction and gradient. Water levels in wells suspected of containing LNAPL will be measured with an oil-water interface probe.

After each water level measurement, the probe will be decontaminated using a detergent wash followed by a distilled water rinse. Following sample collection at each location, sampling pumps, cables, and flow-through cell with probes, will be decontaminated by cycling the pump in a detergent wash, tap water rinse and distilled water final rinse.

5.0 INVESTIGATION-DERIVED WASTE MANAGEMENT

Drill cuttings, excess soil from trenching, and concrete and asphalt taken up during trenching will be transported to the Butte-SilverBow landfill in Rocker, Montana for disposal.

Purge water generated during groundwater sampling will be handled and disposed in accordance the DEQ Purgewater Disposal Flow Chart.

6.0 DATA VALIDATION

All soil, groundwater and SVE discharge analytical data will be validated using the DEQ Data Validation Summary Form (DVSF). On the basis of data validation, any suspect analytical results will be identified in the sampling report.

7.0 REPORTING

Following the first and second groundwater sampling events, RTI will submit interim data reports that will include tabulated SVE monitoring and groundwater sampling data with laboratory analytical reports. Upon completion of all work tasks described in the previous sections and receipt of analytical data, RTI will prepare and submit a Standardized Abbreviated Generic Application Report (AR-07) that will discuss SVE system installation and performance, groundwater sampling events, and any further recommendations to remediate the petroleum release at the Facility. The Report will also include the following:

- Discussion that details the results of the completed work plan;
- SVE system as-built drawings;
- Tabular presentation of soil (if any), SVE monitoring and sampling, and groundwater sampling data;
- Updated site map, potentiometric surface maps, and contaminant distribution maps;
- Conclusion section that summarizes current site conditions; and
- Recommendation section for future work to resolve the release, supported by the discussion and conclusions.

Soil boring logs, well completion records, groundwater sampling logs, laboratory reports, and DVSFs will be appended to the report.

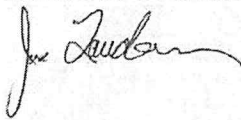
Electronic versions of the report will be submitted as required by MDEQ and Mr. Briggs Anderson (current site owner). A hard copy of the report will be submitted to Mr. Metcalf.

8.0 BUDGET

A breakdown of costs associated with work plan preparation, SVE system installation and monitoring, and groundwater sampling is attached. Bids for remediation well installation and trenching and surface restoration were obtained from qualified contractors (copies attached). Drilling bids were provided by HazTech Drilling, and

Boland Drilling. The low drilling bid was provided by HazTech Drilling. RTI sought bids for trench work from Mile High Excavating, High Country Concrete, and Hunter Brothers Excavation. The low bid for trenching and surface repair was provided by Mile High Excavating. Hunter Brothers Excavation did not provide a bid. The total cost for workplan preparation, SVE/sparge system installation, operation and maintenance, groundwater sampling, and reporting is \$110,650.12. If you have any questions or comments regarding this workplan, please do not hesitate to call.

Respectfully Submitted,
Resource Technologies, Inc.



Joe Laudon
Hydrogeologist

Attachments

cc: Mr. Bruce Metcalf – Bruce's Quick Lube and Car Care Center
Mr. Briggs Anderson – Current site owner – 109 Applehouse Lane; Missoula, MT 59802
briggs.anderson@gmail.com

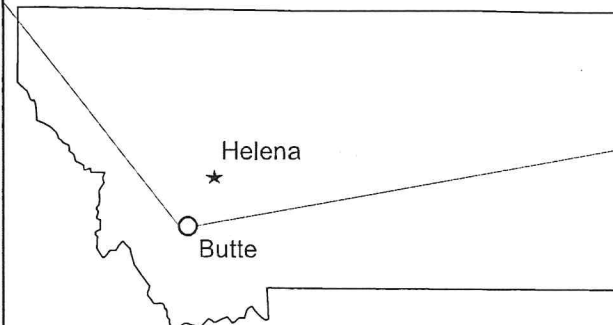
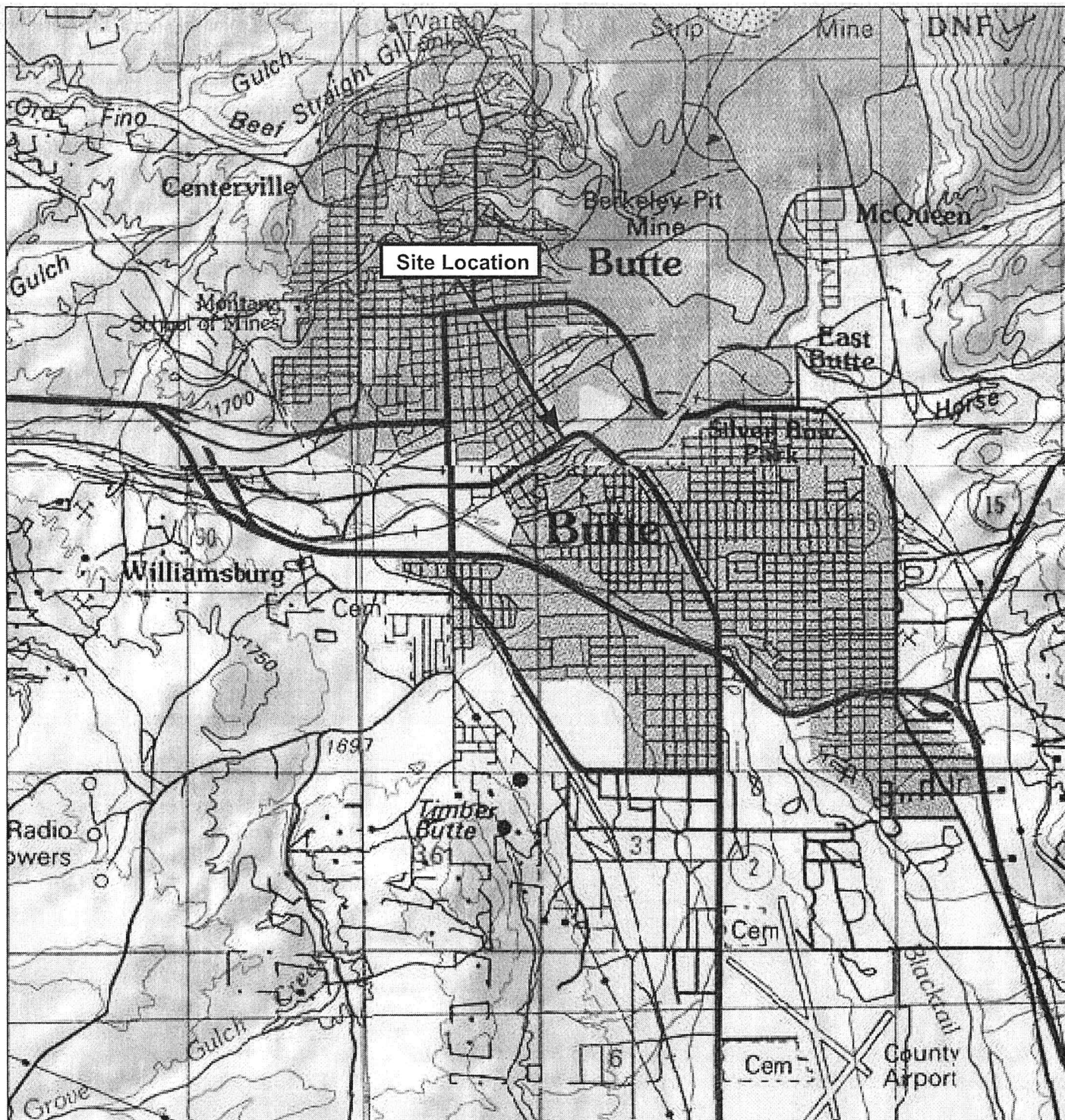
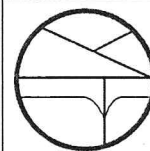


Figure 1

Site Location Map
 Bruce's Quick Lube & Car Care Center
 1111 East Front Street
 Butte, Montana



Resource
 Technologies
 Inc.

Base Map: U.S.G.S Bozeman Quadrangle, 7.5 minute Series, 1987 - Scale 1:24,000 (1" = 2000')